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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,248	09/15/2003	Sean Timothy Crowley	AMKOR-036C	2413
7663	7590	01/07/2005	EXAMINER	
STETINA BRUNDA GARRED & BRUCKER			LE, THAO X	
75 ENTERPRISE, SUITE 250				
ALISO VIEJO, CA 92656			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 01/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/662,248

Applicant(s)

CROWLEY ET AL.

Examiner

Thao X. Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 24-31 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5929513 to Asano et al.

Regarding claim 24, Asano discloses a lead frame 32 in fig. 3A-3C comprising a peripheral tie bar 43, column 5 line 43, and a plurality of leads 33, fig B-C, column 5 line 16, extending from tie bar 43, fig. 3B, in isolation from each other and segregated into two sets, fig. 3A, the leads of each set being linearly aligned and arranged in spaced, generally parallel relation to each other such that each of the leads of one set extends in opposed relation to a respective one of the leads of the remaining set, each of the leads defining opposed, generally planar top and bottom sides; an inner end 33a, column 5 line 29, and a notched surface (step portion), which is disposed in opposed relation to the bottom side and extends to the inner end 33a, fig. 3C, each of the leads 33 having a first thickness between the top and bottom sides which exceeds a second thickness between the bottom side and the notched surface, fig. 3C.

Regarding claims 25-27, Asano discloses the lead frame wherein the notched surfaces 33a of the leads 33 extend in generally co-planar relation to each other

wherein the bottom sides of the leads extend in generally co-planar relation to each other wherein the top sides of the leads extend in generally co-planar relation to each other, fig. 3C.

Regarding claim 28, Asano discloses a lead frame 32, fig. 3A-C, comprising: a peripheral tie bar 43, and a plurality of leads 33 extending from the tie bar 43 in isolation from each other and segregated into two sets, fig. 3A, the leads 33 of each set being linearly aligned and arranged in spaced, generally parallel relation to each other, fig. 3A, such that each of the leads of one set extends in opposed relation to a respective one of the leads of the remaining set, each of the leads defining opposed, generally planar top and bottom sides; an inner end 33a; and a notched surface (step portion) which is disposed in opposed relation to the top side and extends to the inner end; each of the leads having a first thickness between the top and bottom sides which exceeds a second thickness between the bottom side and the notched surface, fig. 3C.

Regarding claims 29-31, Asano discloses the lead frame wherein the notched surfaces of the leads extend in generally co-planar relation to each other, wherein the bottom sides of the leads extend in generally co-planar relation to each other, wherein the top sides of the leads extend in generally co-planar relation to each other, fig. 7.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 14-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6157074 to Lee in view of US 6414385 to Huang et al.

Regarding claim 14, Lee discloses a semiconductor package in fig. 7, comprising: a lead frame 1, column 4 line 7, comprising a plurality of leads 6, column 4 lines 15-16, segregated into two sets, fig. 7, the leads of each set being linearly aligned and arranged in spaced, generally parallel relation to each other such that each of the leads of one set extends in opposed relation to a respective one of the leads of the remaining set, fig. 7, each of the leads defining opposed, generally planar top and bottom sides, a semiconductor chip 3, column 4 line 11, having a top surface and a bottom surface, the bottom surface partially overlapping and attached to the top side of at least one of the leads 6 of each of the sets, the semiconductor chip being electrically connected to a portion of the top side of at least one of the leads 6 which is positioned below the top surface, fig. 7; and a sealing material 13, column 4 line 17, at least

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partially encapsulating the lead frame 1 and the semiconductor chip 3, the sealing 13 having opposed, generally planar upper and lower surfaces, fig. 7.

But Lee does not disclose the bottom side of each of the lead is generally co-planar with the lower the lower surface of the sealing material.

However, Huang discloses the semiconductor package in fig. 8 wherein the bottom side of each of the lead 326, column 5 line 7, is generally co-planar with the lower the lower surface of the sealing material 332, column 5 line 9. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the co-planar surface teaching of Huang with Lee' device, because it would have allowed further attaching other element such as heat spreader for better heat dissipation as taught by Huang, column 5 lines 31-35.

Regarding claim 15, Lee discloses the semiconductor package wherein: each of the leads 6 further defines an inner end 6 and a notched surface 9, column 4 line 23, which is disposed in opposed relation to the bottom side and extends to the inner end; each of the leads 6 has a first thickness between the top and bottom sides which exceeds a second thickness between the bottom side and the notched surface, and the semiconductor chip 3 partially overlaps and is attached to the notched surface 9 of at least one of the leads 6 of each of the sets, fig. 7.

Regarding claim 16, Lee discloses the semiconductor package wherein the semiconductor chip 3 is electrically connected to the topside of at least one of the leads via a conductive wire 10, column 4 line 34, which is covered by the sealing material 13.

Regarding claims 17-20, Lee discloses the semiconductor package wherein the semiconductor chip 3 is electrically connected to the notched surface 9 of at least one of the leads 6 via a solder ball 5, column 4 line 14, which is covered by the sealing material 13, wherein the notched surfaces 9 of the leads 6 extend in generally co-planar relation to each other, wherein each of the leads further defines an inner end and a notched surface which is disposed in opposed relation to the top side and extends to the inner end 6; and each of the leads has a first thickness between the top and bottom sides which exceeds a second thickness between the top side and the notched surface 9, wherein the semiconductor chip 3 is electrically connected to the top side of at least one of the leads via a conductive wire 10 which is covered by the sealing material 13.

Regarding claims 21-23, Lee discloses the semiconductor package wherein each of the leads 7 further defines an outer end; and the sealing material 13 encapsulates the lead frame such that the outer end 7 of each of the leads is exposed within the sealing material 13, wherein the bottom sides of the leads 7 extend in generally co-planar relation to each other, wherein the top sides of the leads extend in generally co-planar relation to each other, fig. 7.

Response to Arguments

6. Applicant's arguments with respect to claims 14-31 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X Le whose telephone number is (571) 272-1708. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M Fahmy can be reached on (571) 272 -1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thao X. Le
05 Jan. 2005



LONG PHAM
PRIMARY EXAMINER